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DIGEST

Dental Digest

Forty-Sixth Year of Publication
Volume 66 No. 11

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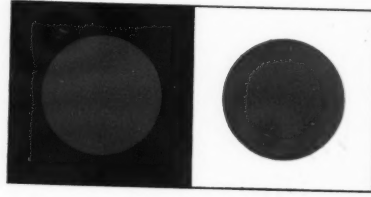


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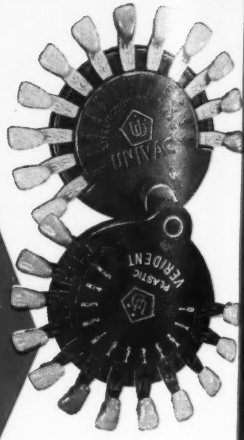
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APPEARANCE AND BLEND
UNDER ALL NORMAL LIGHT
AND ENVIRONMENTAL
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Dental Digest

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NOVEMBER 1960*About Our***CONTRIBUTORS**

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ORAL CONDITIONERS:

Their Role in the Treatment of Muscular Imbalances

HARRY N. COOPERMAN, D.D.S., Doylestown, Pennsylvania

DIGEST

Skeletomuscular imbalances of the stomatognathic system may be the sole cause of denture failures. A mechaniconeuromuscular approach to alleviate these imbalances is presented in this article. This approach utilizes a three dimensional orthopedic plan of procedure to aline anatomically the mandible and its muscular attachments prior to the application of prosthetic appliances. Conventional palliative procedures to relax the musculature are not entirely satisfactory; the approach presented here is intended to be of aid to the patients who cannot wear prosthetic appliances.

Causes of Dental Failure

Many patients insist that they will never be able to wear dentures and

often produce as evidence several dentures that have been discarded. When referred by a successfully treated patient the case becomes a challenge to the dentist.

Conditions Frequently Noted—Clinical examination reveals muscle spasm, loss of muscle tone, muscle fatigue, contracture, disuse atrophy, facial asymmetry, and mandibular malposture, all of which are known to produce improper muscle posture.

Abnormalities Must be Corrected—Complete denture failures may be traced to the presence of anatomic and

physiologic conditions.¹ Unless these existing abnormalities are previously eliminated by proper treatment the possibility of successful prosthetic service is seriously jeopardized.²

Use of Oral Conditioners

Skeletomuscular imbalances can be successfully treated by the use of oral conditioners which are clear acrylic, bite-block, flat, plane-like dentures. They not only provide the patient with the function of dentures, but also assist in diminishing the muscular symptomatology. The purpose of the oral conditioners is to create ideal skeletomuscular posture.

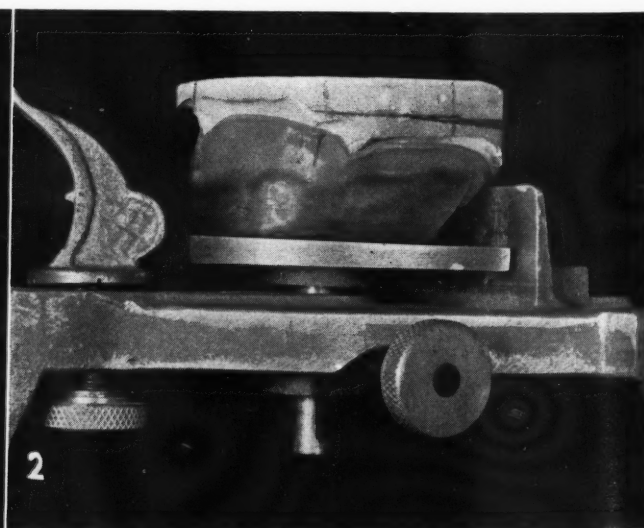
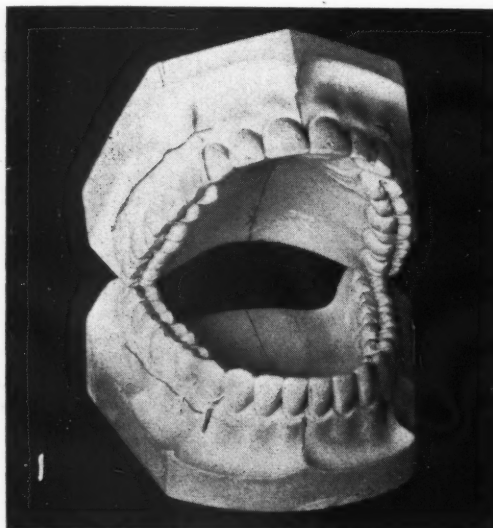
Duration of Wear—Oral conditioners are worn until the patient is able to speak, swallow, chew, and retain them in place with comfort. Duration of wear usually depends upon the degree of imbalance present. It is not

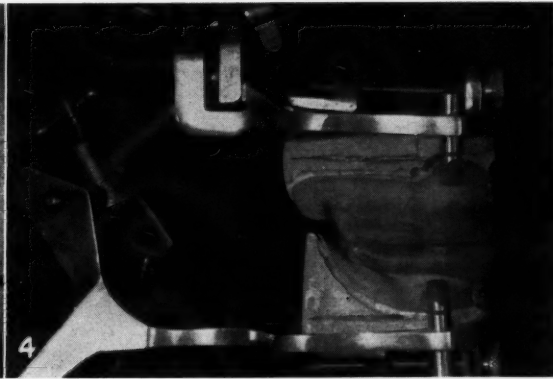
1.
Upper and lower casts showing geometric planes of orientation.

2.
Vertical height and occlusal plane of upper wax bite-rim processed on the Cook Analyser.

¹Block, L. S.: Preparing and Conditioning the Patient for Intermaxillary Relations, *J. Pros. Dent.* 2:559 (Sept.) 1952.

²Boos, R. H.: Preparation and Conditioning of Patients for Prosthetics, *North-West Dentistry* 37:271 (Sept.) 1958.





unusual for the patient to wear the conditioners for a period of one year. If esthetic improvement is desired six anterior upper and lower artificial teeth can be processed into the acrylic.

Final Dentures Duplicate of Conditioners—Many non-denture wearers have been rehabilitated by conditioners. Final dentures are practical duplicates of the oral conditioners with prescriptive teeth using the resultant vertical centric, freeway space, planes of occlusion, and length.

Contraindications—This mechanical approach to the problem of imbalance is not possible if infections, neoplastic, abnormal growth, and developmental patterns, or other complications exist.

Evidence of Impairment—Impaired anatomy and physiology may be present if the following situations are noted:

1. The patient has been unable to wear and adjust to previous prosthesis.
2. The face is asymmetrical.
3. The throat movement is not rhythmic during swallowing.
4. Mouth breathing is present.
5. Tone of the face and neck muscles is abnormal.
6. Mouth and tongue habits exist.
7. Clicking and crepitus appear during opening and closing of the mandible.
8. Palpation of the masseters, temporal or internal pterygoid muscles produce pain.
9. The mandible swings during opening and closing.

Orthopedic Diagnosis

For diagnosis the following steps are taken:

1. Casts are processed from com-

3. Pencil dots act as guides as patient crushes soft wax of the lower against firm flat plane of the upper bite-rim.

4. Upper and lower wax rims transferred from mouth to analysing instrument.

plete impressions of the mouth.

2. The upper cast should disclose all the soft tissue in detail; rugae, frenum, median raphe, maxillary bone formations, hamular notches, soft palate, gingival tissue, and mucobuccal folds.

3. The lower cast should also show all the soft tissue in detail; frenae of the tongue and lower lip, retromolar pads, and the topographic features of the alveolar bone.

Casts Scored—Three dimensional geometric plane lines are scored on the upper and lower casts as described by Cooperman-Willard³ (Fig. 1). Where teeth are absent the ridge lines fall on the edentulous areas.

Vertical Height Obtained—A wax bite rim is made for the upper cast in order to secure the prescribed vertical height. Its occlusal plane should be parallel to the horizontal plane lines of the cast. The use of a Cook Analyser⁴ facilitates this procedure (Fig. 2).

Additional Steps In Diagnostic Technique

1. The ridges of the lower cast are covered with a 2-millimeter thick baseplate.
2. Additional soft wax is added to

the baseplate and this together with the upper bite-rim are transferred to the mouth.

3. The patient is asked to crush the soft wax of the lower against the firm flat plane of the upper bite-rim to a predetermined closing point.

4. Pencil dots placed on the upper and lower lip to the approximate vertical height may be used as guides (Fig. 3).

5. Casts covered by the upper wax rim and lower bite are then transferred to a Stoll Analyser, Galetti Articulator, or similar instrument which allows proper positional alignment of the three geometric planes (Fig. 4).

6. After transfer the lower wax bite is removed from the analyzing instrument leaving the vertical space between the upper bite-rim and the lower cast.

7. Accurate analysis of the plane lines immediately establishes the degree of derangement between the mandible and the maxilla.³

8. The lower cast is placed so that the horizontal and midplane lines are parallel to one another.³

Malposition of Lower Cast—The transverse plane is not essential in complete edentulous treatment. The malpositions of the lower cast that are corrected in this manner are usually horizontal and vertical tilting.

Construction of Conditioner

The conditioner is completed in the following manner:

1. The wax is removed from the lower baseplate.
2. Newly heated soft wax is added to the baseplate. This is placed on the positioned lower cast and crushed be-

³Cooperman, H. N.: A New Approach to the Diagnosis and Treatment of Head and Neck Syndromes, DENTAL DIGEST 62:248 (June) 1956.

⁴Cook, J.: The Utilization of Anatomic Landmarks in Creating an Occlusal Plane for Edentulous Patients, DENTAL DIGEST 58:202 (May) 1952.

tween the upper wax bite-rim and the lower cast producing a lower wax bite-rim in the instrument.³

3. These wax rim bites when processed into clear acrylic will produce the oral conditioners (Fig. 5).

4. The occlusal table of the upper conditioner should be 8 millimeters wide, 4 millimeters to either side of the ridge center.

5. The table of the lower conditioner is constructed to occlude and have the same width as the table of the upper conditioner.

Occlusion Obtained by Use—When transferred to the mouth, the occlusal planes of the orthopedic positioned conditioners may not occlude as they did in the analyzing instrument (Fig. 6). Use of the conditioners will eventually change the tones of opposing conditioners to occlude as orthopedically prescribed (Fig. 7).

Aids to Occlusion—Adjunctive exercise⁵ and the use of ethyl chloride spray⁶ has been used when necessary to facilitate positioning.

Immediate Adjustment Required—Patients adjust not only to the new position of the mandible but also to the decreased space for the tongue and other inconveniences that result from insertion of complete dentures. Insist that the patient attempt to masticate immediately.

Means to Facilitate Mastication—After one week of oral use the table of the lower conditioner is "railed" so that only 3 millimeters of the lingual part of the table is present (Fig. 8). This procedure facilitates mastication.

Summary

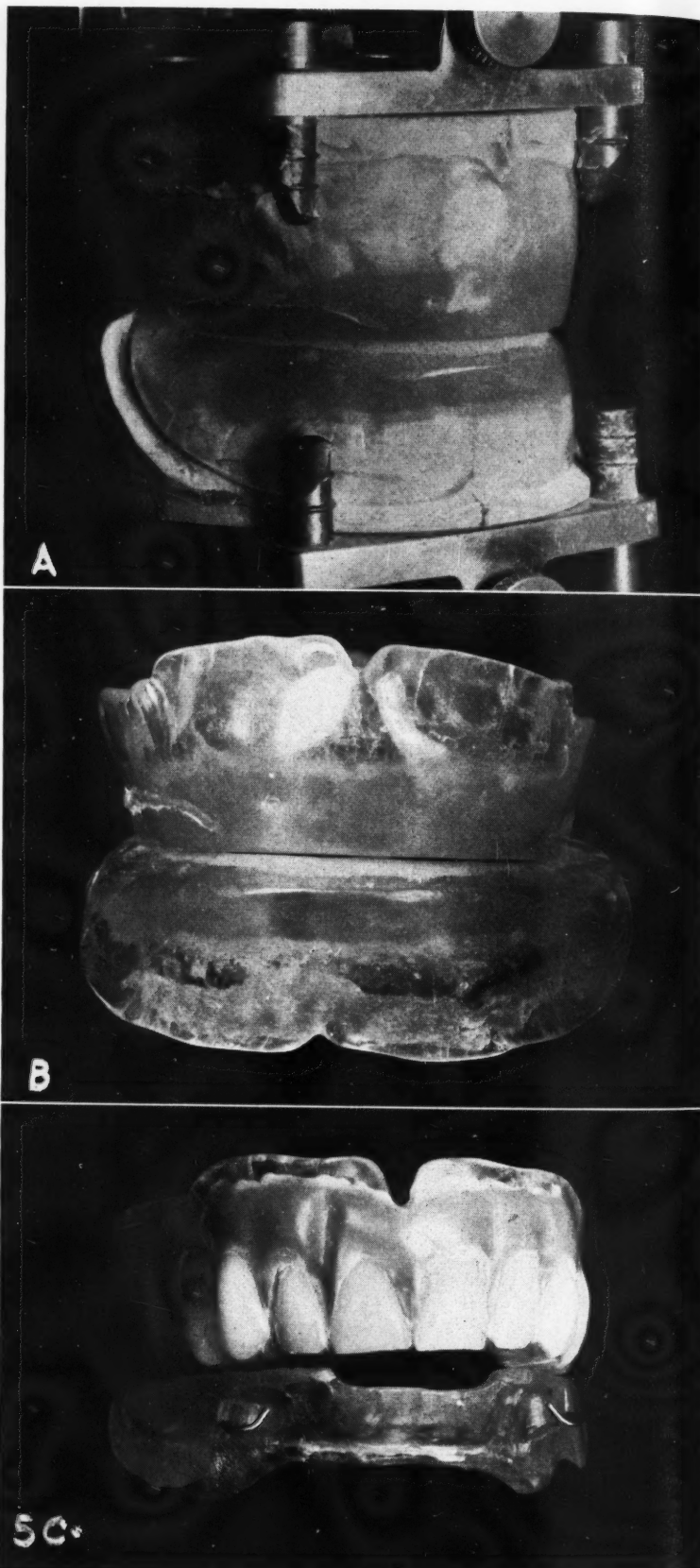
The role of oral conditioners prior to the construction of complete or incomplete dentures has been presented. These conditioners provide mastication.

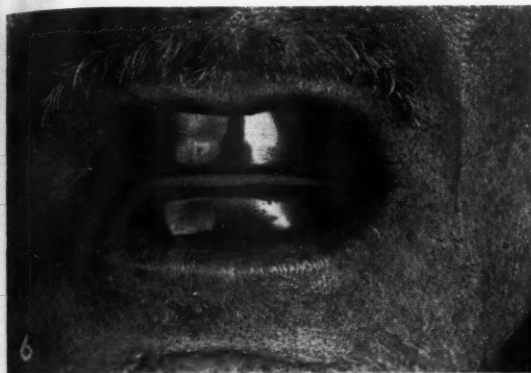
⁵Kraus, H.: Principles and Practice of Therapeutic Exercises, Springfield, Illinois, Charles C Thomas, 1950.

⁶Travell, J., and Renzler, S. H.: Scientific Exhibit: Myofascial Genesis of Pain, Postgrad. Med. 11:425 (May) 1952.

5, A, B, and C.

Processed oral conditioners for complete and partial prosthesis. Pink acrylic is added to lower conditioner which corrects to geometric planes.





6. *Preneuromuscular therapy position of the conditioners.*



7. *Neuromuscular therapy completed, conditioners assume the positions predetermined in the analyser.*



8. *Railing the table of the lower conditioner assures axial force patterns facilitating mastication and neuromuscular therapy.*

tory function and correct and maintain musculoskeletal relationships. Simultaneously, they enable the musculature to perform its proper physiologic function.

The flat planes of the conditioner permit only axial stress. This reduces muscular trauma, a predisposing cause to the impairment of the musculature.

Conclusion

Impaired physiology may be the

sole cause of the patient's inability to wear complete or partial dental prosthesis. Successful treatment can be

obtained using oral conditioners as a mechanical approach to this problem.
401 South Main Street

Aphthous Stomatitis

Problem

A 16-year-old boy has had recurrent aphthous stomatitis for several years. He has been treated with vitamins, repeated smallpox vaccinations, local astringents, and other forms of local treatments without success. There is no family history of this disorder. He plays a trombone in the school band and this activity seems to aggravate the condition. During the summer when he discontinued playing the trombone, the condition subsided almost completely. He does not remem-

ber ever having the ulcers before playing the trombone. Could this be a contact sensitivity from the metal in the trombone mouthpiece? Most of the ulcers are at an area which would be in contact with the mouthpiece, although occasionally ulcers appear elsewhere in the mouth. Can any preventive measures be taken so that he can continue to play his instrument?

Discussion

From the information supplied it would be unlikely that the condition described is caused by any specific contact sensitivity to the metal from the trombone mouthpiece. Contact sensitivity reactions are generally not sharply outlined to the extent of causing circular or oval aphthous-type

ulcers. There would be a more obvious tendency to diffused reaction. Physical trauma from repeated application of the mouthpiece to the lips could conceivably act as a trigger mechanism setting off the aphthous reaction. It would not be of any help to perform patch tests with material from the mouthpiece. There would not seem to be any way of altering the mouthpiece in any beneficial manner. If not already tried, it is suggested that two *Lactobacillus* suspension tablets be dissolved in the mouth with milk, four times daily for several days. This may be repeated as indicated, if helpful.

Adapted from *Journal of the American Medical Association* 173:1619 (Aug. 6) 1960.

The Use of a New SUBLINGUAL HEMOSTAT in Dental Practice

BERNARD F. LINN, D.D.S., Newark, New Jersey

DIGEST

*This is a report of a ten-year study in the control of bleeding with a sublingual preparation⁶, Koagamin.[®]**

Operative Problem

Dental hemorrhage is being increasingly recognized as a serious aftermath of surgical procedures. Bleeding, which delays healing, is a source of anxiety and discomfort to the patient. Excessive bleeding can also seriously hinder the dentist by obstructing his field of vision and by prolonging operative time.

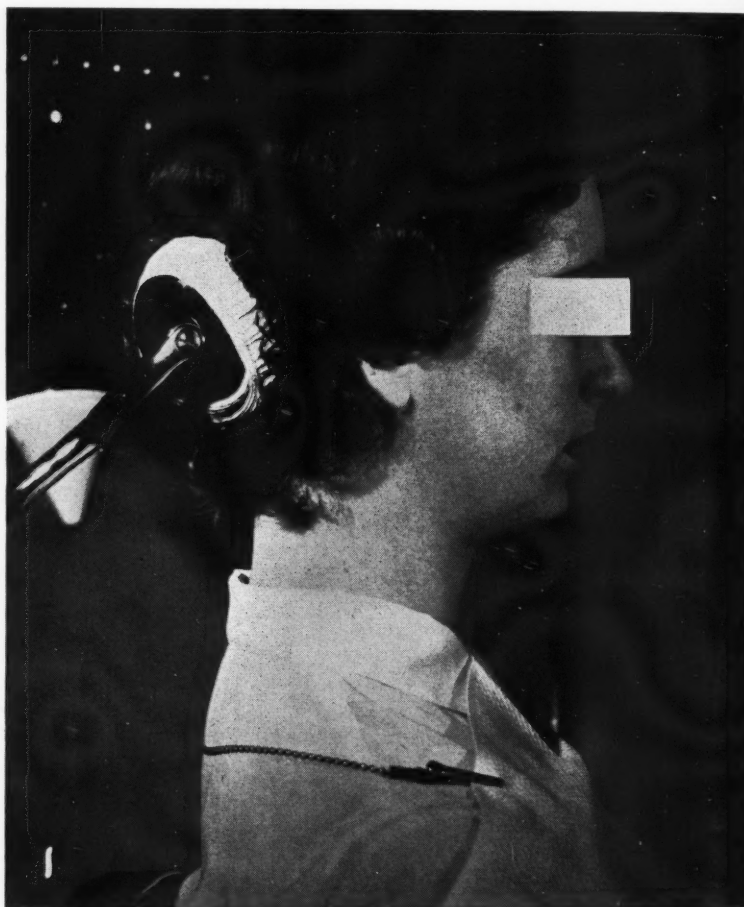
Factors Involved—Many factors are involved in dental hemorrhage: (1) The age and general condition of the patient, (2) the specific procedure employed, (3) the amount of manipulation required, (4) operative or accidental injury to surrounding tissues, and (5) condition of blood vessels and the rate of clot formation.

Aid to Control Hemorrhage—The dentist has little or no control over many of the factors involved, but there are various preparations available that will decrease the clotting time of

blood, either locally or systematically. Among the hemostatic measures that aid in the control and management of dental hemorrhage, both primary and secondary, the one which the author has found most suitable is sublingual Koagamin[®], a solution of oxalic and malonic acids.

Hemostatic Agent

Koagamin in parenteral form has been used by the medical profession since 1938 and has received wide and increasing acceptance by physicians in general practice, surgery, and in specialized practice. Reports by physicians indicate that it provides safe, rapid, and systematic control of capillary and venous bleeding without undesirable reactions.¹⁻⁷



1.
Patient in upright position with head tilted forward.

*Koagamin Dental Sublingual Hemostat is manufactured by Chatham Pharmaceuticals, Inc., Newark, New Jersey.

¹Copley, A. L. and Lalich, J. J.: The Influence of Blood Transfusion and Injections of Bursa Pastoris (Shepherd's Purse) Extract on the Clot Resistance in Two Hemophiliacs, *Am. J. M. Sc.* **204**:665 (Nov.) 1942.

²Ferguson, J. M.: Blood Coagulation, Thrombosis, and Hemorrhagic Disorders, *Ann. Review Physiol.* **8**:231-262, 1946.

³Hollender, A. R.: Office Treatment of the Nose, Throat, and Ear, Chicago, The Year Book Publishers, 1943, p. 200.

⁴Hulse, W. F.: Control of Hemorrhage, *Arch. Otolaryng.* **37**:831 (June) 1943.

⁵McGavack, T. H.: Some Recent Advances in the Treatment of Hemophilia, *M. Clin. North America* **24**:791 (May) 1940.

⁶Wolfe, M. M.: Rhinophyma; With New Etiologic and Therapeutic Considerations, *Laryngoscope* **53**:172 (March) 1943.

⁷Joseph, M.: Control of Hemorrhage—or Transfusion, *Am. J. Surg.* **87**:905 (June) 1954.



2.
Elevation of the tongue.

Advantages—The sublingual solution offers new convenience in dental practice:

1. It is easily administered.
2. It adds no foreign body or material to the operative field, thus facilitating healing by assisting in rapid formation of natural normal clots.
3. It reduces manipulation and irritation to the surrounding tissues since the need for sponges and suction is reduced.
4. Because it increases the coagulability of the blood, the operating time is significantly shortened.
5. Firmer blood clots are formed sooner with less discomfort to the patient and less tendency to develop infections.

Applications—The solution may be used in various types of oral surgery, but the most dramatic results have been obtained in the fitting of immediate dentures. Most patients experience severe pain and swelling of the tissues 4 to 48 hours after surgery and find it difficult or sometimes impossible to tolerate the new denture in the

mouth. With the use of Koagamin the patient adapts to the dentures more rapidly.

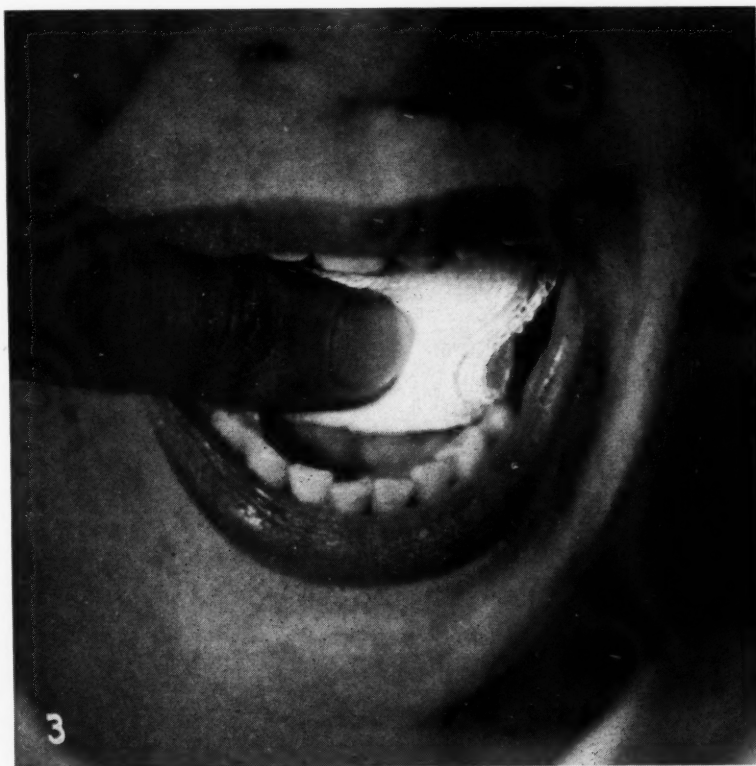
Rapid Absorption—The solution is applied to the sublingual mucosa and is rapidly absorbed by the sublingual veins thereby providing systemic control of bleeding.

Decrease in Clotting Time Estimated—The solution was first tested by the author in 1949. At that time it was used on 25 normal subjects. The average decrease in clotting time was 33 per cent in 15 minutes and 39 per cent at 45 minutes.

Results Noted—In more than 200 cases of oral surgery reduction in bleeding, decreased operative time, and accelerated healing occurred thus making the procedure less uncomfortable for the patient. No undesirable reactions were observed.⁸

Versatile Uses—Koagamin has been used almost routinely by the author during the last ten years on patients of all ages. The operations included

⁸Linn, B. F.: Sublingual Application of a Solution of Oxalic and Malonic Acids to Decrease Clotting Time in Oral Surgery, JADA 38:168 (Feb.) 1949.



3.
Floor of mouth isolated and dried.

TABLE I

Case No.	Sex and Age	Results With Sublingual (Koagamin®) Hemostat Employed Preoperatively In 11 Oral Surgical Procedures	
		Operation	Observations
1	M-70	Multiple extractions	History of excessive bleeding previously. Sublingual hemostat was used 4 out of 5 times with uneventful postoperative healing. When not used, site oozed 24 hours.
2	M-72	Multiple extractions: 16 teeth	Firm clots; no infection. Healing better than usual.
3	F-9	Root removal: 4 six-year molars	Excellent visibility and demarcation of operative field. Minimal postoperative bleeding. Healing satisfactory.
4	M-40	Root removal: lower bicuspid	Oozing controlled; good visibility. Uneventful healing.
5	F-48	Removal of 7 anterior teeth: immediate dentures	History of severe postoperative bleeding after single extractions. Complete control of oozing in 25 minutes; firm clots in 24 hours. No discomfort; absence of odor.
6	M-57	3 extractions	Under treatment for cardiac condition. Bleeding controlled; firm clots formed, healing rapid.
7	M-47	Horizontal impaction complicated by heavy, hard bone	Excellent demarcation between bone and tooth simplified removal in an otherwise difficult case.
8	M-45	Simple extraction of molar	Previous history of profuse bleeding and postoperative difficulties. Bleeding controlled and postoperative healing uneventful.
9	M-69	Multiple extractions	Patient in poor physical condition, pyorrhea present. No postoperative bleeding; healed well.
10	M-68	Extraction of 3 individual upper molars with brittle roots	Visibility good; area between bone and roots well demarcated. Postoperative healing uneventful.
11	F-47	Extraction of 8 upper, 7 lower anterior teeth; immediate full upper and lower dentures	Patient under medical and psychiatric treatment. Operation uneventful. Returned 3 days later; firm, normal clots formed under dentures. Patient satisfied.

simple single extractions, multiple extractions, impactions, and immediate dentures. Among the abnormal physical conditions encountered in the patients were (1) hypertension, (2) cardiac or renal dysfunction, (3) diabetes, and (4) situations in which ex-

Procedure Employed

The sublingual solution must be applied properly to obtain full benefit:

1. The patient is seated upright with head tilted slightly forward.
2. The tongue is elevated and the floor of the mouth isolated and dried with gauze or air.

(Continued on page 513)

4.

4-minim unit of the hemostatic agent and application over the sublingual vessels.



The Antagonism of CRIES and PERIODONTAL DISEASE.

HAROLD S. JONES, D.D.S., Allentown, Pennsylvania

DIGEST

Clinical evidence indicates that teeth lost by periodontal disease are usually free from caries and also that in patients where carious teeth have been persistently and properly restored these teeth tend to be free from serious periodontal disease.

When antagonism which is always present in living tissue is revealed by disease the diagnosis and prognosis of the situation can be defined. The oral cavity reflects these antagonisms which Broderick¹ has described in detail. The charts in this article explain some of the factors involved in this theory.

Fundamental Factors In Loss of Teeth

Human teeth are lost because they are fractionally destroyed by caries or they are lost *in toto* because of deterioration of the periodontal tissue.

Premise Unpopular—The conception that caries is opposed and antagonistic to periodontal disease is difficult to appreciate and is not easily accepted. The conception that antagonism prevails in the destruction of dental tissues may be restated: when caries is present periodontal disease is usually absent; in teeth involved by periodontal disease caries is absent.

State of Dual Disease—There is, however, a condition of the dental structure in which caries and periodontal disease are present at the same time: a dual condition of disease. This dual condition appears to deny the original premises of this conception,

but can be explained by the changes that occur in patients as they pass from early life to old age.

Analysis of Chart A

For better comprehension of the theory of antagonism and a more complete explanation Chart A may be examined. The chart is divided into two sections at either side, each containing

Constitutional Deviations

Increase of Caries	Immunity to Caries: Increase of Periodontal Disease
--------------------	---

Underweight	Overweight
Dry mouth	Normal or free salivation

Skin Conditions

More blemishes, acne at puberty	Good complexion, absence of blemishes
---------------------------------	---------------------------------------

Hair Condition

Abundant, fine	Scant, coarse, often bald-headed
----------------	----------------------------------

Saliva

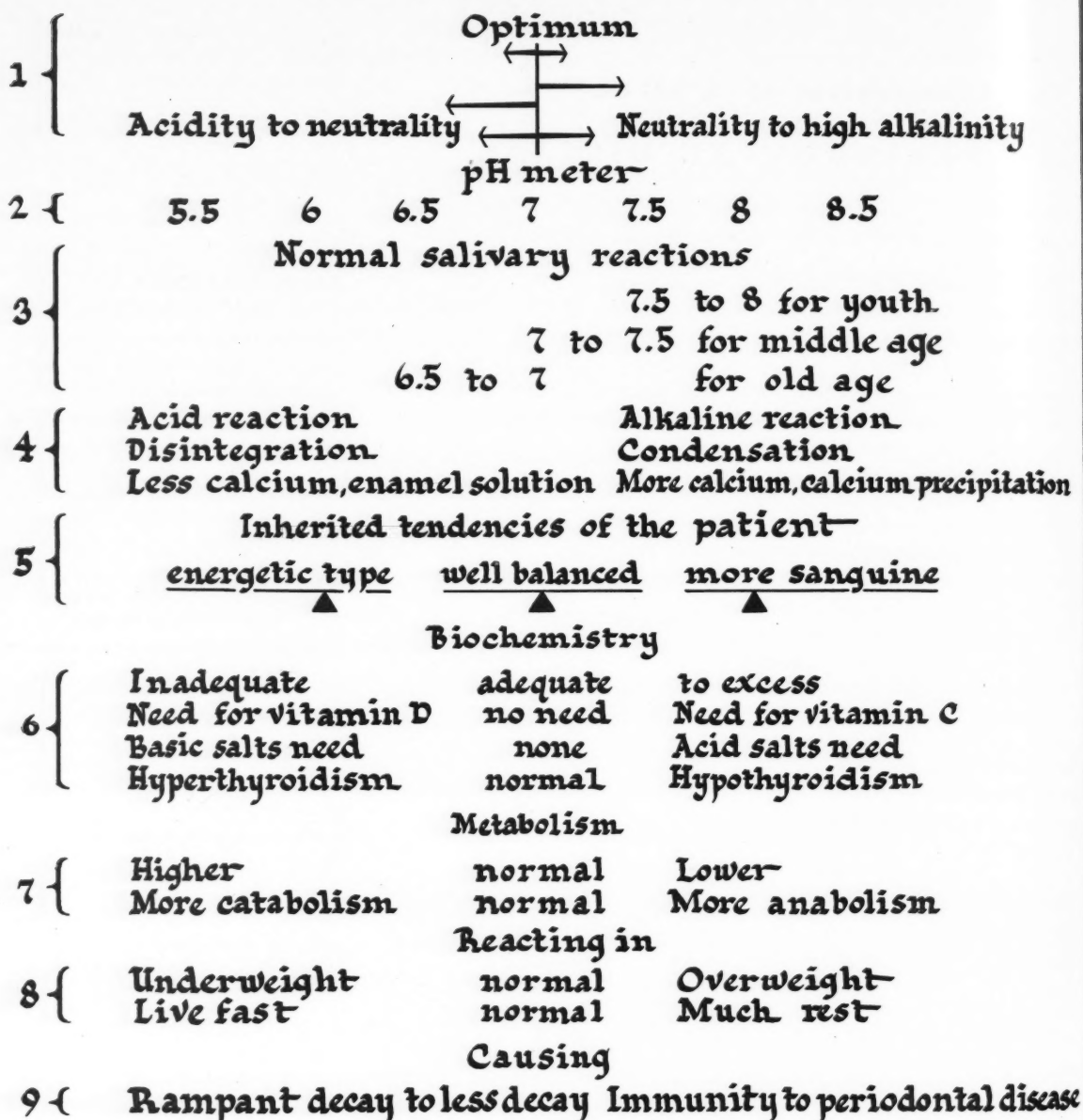
Thick saliva	Normal to excessive saliva
More acid	Definitely alkaline
Less ammonia in saliva	More ammonia in saliva
No fluorine content	Excessive fluorine

Physiologic Factors

Increase of Caries	Immunity to Caries: Increase to Periodontal Disease
--------------------	---

More emotional reactions at puberty	Normal reactions at puberty
Pregnancy	No pregnancies; no calcium or other mineral drainage
Menopause reactions in both sexes	Normal adjustment, no reactions

CHART A



opposing factors with optimum conditions represented in the center. The following is a detailed discussion of some of the information illustrated.

Changes in Condition—Item No. 1 is a graphic illustration of dental caries versus immunity, with arrows indicating that on the acid side tooth structure is going into solution. The arrow on the immunity side indicates condensation of salivary ingredients causing calculus precipitation. The

three arrows over the median line indicate that a patient can start from normal and proceed to either side, or go from one side (or condition) to the other. This illustration also indicates that the environment (saliva plus fermentation of debris) could run from strong acidity to neutrality or from neutrality to high alkalinity, also vice versa.

Acid-alkali Relationship—Item No. 2 depicts the pH meter placed with

pH 7 the point of neutrality in the center to assist in realizing the value of acid-alkali relationship to this study.

Normal Salivary Reactions—Item No. 3 is a graphic illustration of normal salivary reactions in pH readings. This is a summary of findings pertaining to the basic concept of normal saliva reactions as described by Broderick.¹ He has deduced that the normal saliva reactions for youth are

Oral Hygiene

Increase of Caries

Carbohydrates: candy, soda pop, chewing gum
Low mineral content
Poor eaters, multiple eaters
No brushing of teeth, negligent hygiene
Illness contributing to neglect of oral hygiene
Excess of citrus fruit; lemon-flavored lolly-pops
Coffee, tea, wine
Drug medication, indulgence in aspirin
Occupational hazards, acid fumes, baker's dust
Crowded, malposed teeth

Immunity to Caries

Natural foods, protein
High mineral content
Three substantial meals a day
Brushing after meals
Good health
Moderate, balanced diet
Moderation in diet
Normal organism is not in need of drugs
No environmental exposure to hazards
Perfect teeth and occlusion

Inherited Tendencies

Imperfect formation of teeth	Sound teeth, pearly in color
Physical frailty	Robust physique
Narrow chest	Broad chest
Nervous temperament	Sanguine, less emotional reaction
Sensitive response to exanthematous diseases	Slower response to exanthematous diseases
Northern climate, favorable geographic conditions	Southern climate, other favorable geographic conditions

Pregnancy

No gingivitis, more caries	More gingivitis, less caries
----------------------------	------------------------------

Local Observations

Increase of Caries	Immunity to Caries: Increase to Periodontal Disease
Less calculus	More calculus
Free of stain	Increase of stains
Mild to rampant caries	Immunity to black carious areas

from pH7.5 to pH8. In middle life the saliva for the normal person is from pH7 to pH7.5. In old age the reaction shifts considerably to the acid side, ranging from pH6.5 to pH7.

Inherited Tendencies Shown—Item No. 5 is an illustration of the different kinds of inherited tendencies. The well balanced person is considered normal, while the fulcrum for the two extremes is placed to the inner end and depicts the types who lose equilibrium more easily when pressure is applied on the side away from the fulcrum.

Additional Charts

The remaining charts are composed of observations drawn from experience and others offered by colleagues.*

1121 Walnut Street

*M. E. Page, D.D.S., St. Petersburg, Florida;
Fred D. Miller, D.D.S., Altoona, Pennsylvania,
N. J. Paquette, D.D.S., Freeport, Maine.
†Dental Medicine, ed. 3, Broderick, F. W., St. Louis, C. V. Mosby Company, 1939.

The Use of a New Sublingual Hemostat in Dental Practice

(Continued from page 510)

cessive bleeding during and after surgery had occurred.

3. The contents of one 4-minim unit of solution is emptied behind the anterior teeth, over the sublingual veins. The patient remains in this position for a minute or two in order to give the solution time to become absorbed.

4. When used preoperatively, the solution is applied before administration of the anesthesia.

Results Obtained

The cases observed included many in which there was a record of excessive bleeding, even after single extractions. Table I shows the results of 11 representative cases. In all cases, one application of the solution was used preoperatively. Subjective and objective improvement was obtained in the majority of cases treated with this sublingual solution.

901 Broad Street

The Selection and Arrangement of ARTIFICIAL TEETH

VICTOR H. SEARS, D.D.S., Vallejo, California

DIGEST

Detailed discussions of the problems having to do with the teeth for dentures have been published.^{1,2} The concise description presented in this article can be used by the technician or dentist to judge the good and bad features of the wax trial dentures before having the dentures completed. Some of the errors that might otherwise cause the dentures to be less successful may thus be avoided.

Preliminary Steps

After the teeth have been selected for the patient the esthetic and mechanical requirements of the case are fulfilled in the manner to be described:¹ (1) The anterior teeth are selected first, and arranged for the particular case.² (2) The posterior teeth are then chosen and placed in position.

Anterior Teeth

In selecting the anterior teeth for dentures four considerations merit special evaluation: (1) size, (2) form, (3) color, and (4) material. Continued study and experience in dealing with these four aspects have resulted in a comprehensive knowledge of the requirements. Manufacturers have consistently improved their products so that more suitable teeth are available than formerly.

Size of Teeth—It is commonly agreed that large teeth are appropriate in large faces and vice versa. In this

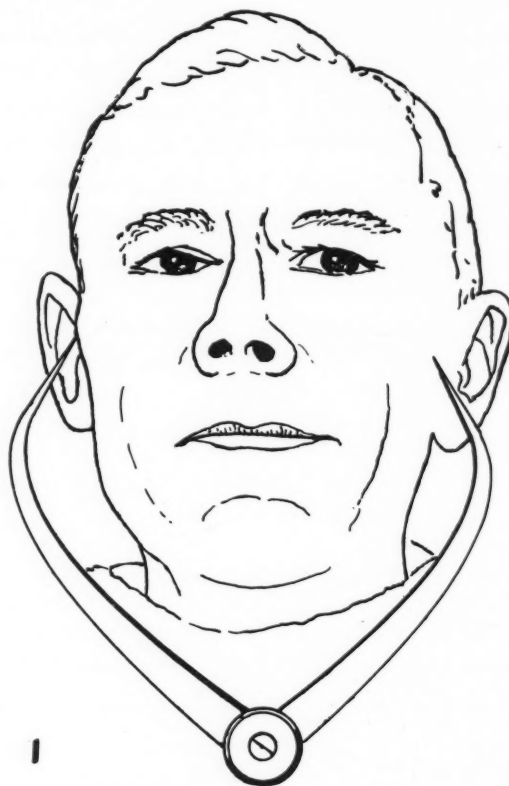
respect two errors are often made:

1. Dentists have sometimes tried to relate the size of the teeth to the size of the mouth or the breadth of the nostrils. This is impossible because, as anthropologists point out, there is no dependable relation between the teeth and the soft tissues of the face.

2. An attempt to determine the size of the upper central incisor by the size

of the face will be unsuccessful. It has been erroneously stated that the upper central incisor is 1/16th as broad at the head as at the zygomas (Fig. 1).

Dependable Procedure—The combined breadths of all six upper anterior teeth may be related to the bizygomatic breadth. Dividing the patient's bizygomatic breadth by 3.3 equals the appropriate breadth for the six anterior teeth of the upper jaw. The lower six anterior teeth should measure 4/5th as broad as the upper ones.



1.

The head should be measured at the cheek bones either with a special gauge or with ordinary calipers as shown here. Formula: The bizygomatic width divided by 3.3 = the width of the upper six anterior teeth.

¹Pound, Earl: Lost—Fine Arts in the Fallacy of the Ridges, J. Pros. Den. 4:6-16 (Jan.) 1954.

²Nagle, Raymond J., and Sears, Victor H.: Dental Prosthetics, St. Louis, C. V. Mosby Company, 1958.

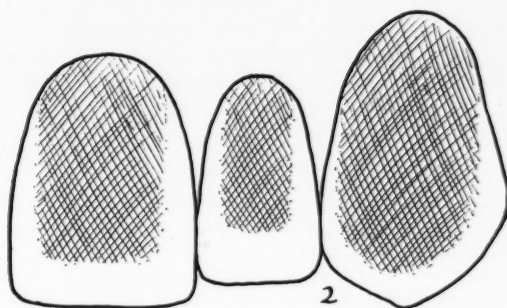
Special Devices—Among the instruments measuring the greatest breadth of the face from one zygomatic bone to the other is the Wavrin Guide.³ Ordinary calipers can also be used. Whatever this measurement, it is divided by 3.3 to find the appropriate combined breadths of the upper six anterior teeth. It is then a simple procedure to set a Boley gauge at the distance computed and measure with it the breadth of the carded set of teeth. This is a more dependable method than computing for any single tooth.

Form—One investigator theorized that the outline of the upper central incisor inverted should be similar to the outline of the patient's face. Another operator carved teeth in this manner and they were available in square, tapering, and ovoid outlines intended for square, tapering, and ovoid faces. Although this typal theory is unsupported by anthropologists, it has gained wide acceptance, and is used by many dentists.

Extreme Forms Avoided—Teeth appear more pleasing when the extreme typal forms are *not* used in correspondingly extreme faces. The extremely square, tapering, and ovoid face should *not* be fitted with corresponding teeth. A safer rule is to avoid all extremes in tooth form. The most important point is to select teeth that are pleasing in appearance.

Color—There has been great improvement in the color of anterior teeth offered by the manufacturers, especially of the upper teeth. The hue, saturation, brilliance, and translucency of artificial teeth now imitate successfully these characteristics found in natural teeth. The more translucent enamel portions of denture teeth as developed by Myerson, first in porcelain teeth and now generally incorporated in both porcelain and resin teeth, marked an important step in the field of denture esthetics.

Improvement in Distribution—Improvement is also observed in the distribution of hue, saturation, brilliance, and translucency in individual teeth and sets of teeth, although the problem of distribution has not been solved.



2. *In imitation of the distribution of the dentin and enamel of natural teeth, each artificial tooth should be composed of a body of dentin-like material in the center of the tooth as shown by the shaded portion, and encased in an enamel-like jacket portion as indicated by the unshaded portion.*

There is still too much sameness throughout. For example, there should be less saturation of hue in the proximal portions of artificial teeth than is generally seen. Especially in the central and lateral incisors, the gray jacket portion of the tooth corresponding with the enamel covering of the natural teeth should be more evident.

Variation in Saturation Desired—There should be less saturation of hue in the upper lateral incisors and more in the cuspids. To follow nature more closely, there should be less saturation in the four lower incisors than in the cuspids. Improvements have been made in this direction, but not to the extent desired. Dentists are largely responsible for this degree of uniformity because they have demanded uniformity from the manufacturers.

It is possible to overcome uniformity to an extent by selecting sets of teeth of the same mold but of different shades (Fig. 2). By matching the upper central incisors with less saturated (more gray) lateral incisors and more saturated (more yellow) cuspids, and by matching the lower incisors with more saturated lower cuspids, it is possible to assemble sets of teeth more nearly like the corresponding natural sets. Careful mixing of shades does much toward producing compositions that are truly lifelike.

Materials—When porcelain was introduced into dentistry, the improvement over previously used tooth materials was so great that it is still the

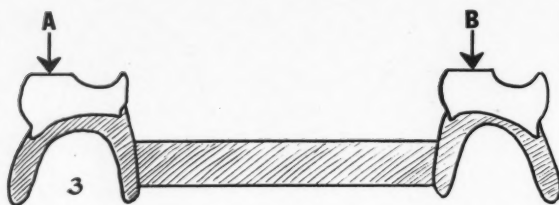
choice of some dentists. As with most new products the first resin teeth were of poor quality, but the more recent cross-linked copolymer resins have such advantages over porcelain that some dentists use them exclusively for anterior teeth. Resin teeth are easier to "characterize" and alter than are porcelain teeth before and after completion of a denture, and they can be made somewhat more life-like than porcelain teeth. Because of their bonding with denture base materials, they add strength to the denture which is a practical advantage especially with lower dentures.

Arrangement of Anterior Teeth—Technicians and dentists have learned to arrange teeth in closer imitation of the pleasing arrangements seen in natural teeth. More irregular and more individualized arrangements have done much to overcome the artificial appearance. Young denture patients are more frequently fitted with dentures having longer upper central incisors, and the gingival portions of the cuspids are set more prominently, as they should be.

Posterior Teeth

Many different occlusal designs are available: (1) deep cusp, (2) shallow cusp, and (3) flat plane. In general, the molds on the market are more appropriate for artificial dentures than they were a few years ago. There is, however, still a controversy between the advocates of meshing cuspids and the

³Manufactured by the Dentists' Supply Company.



3.

If posterior teeth were designed as the molar at the left the force at "A" would tend to lift the opposite side of the denture. The teeth should be designed as shown schematically at the right so that the force at "B" would tend to seat more firmly both right and left sides of the denture.

If the working occlusal surfaces were to extend all the way from buccal to lingual sides, it would become necessary in "centralizing the occlusion" to set the teeth too far lingually. Unless teeth are placed so far lingually as to crowd the tongue, only specially designed teeth can be set to assure "lever balance," sometimes called "unilateral balance."

advocates of flat plane occlusal surfaces.

Chewing Efficiency Overemphasized—In this controversy, too much emphasis has been placed on chewing efficiency. Tests made by careful investigators indicate that certain occlusal forms chew some kinds of foods better, whereas other foods are better chewed by different occlusal forms, and that there is little difference among the various current designs.

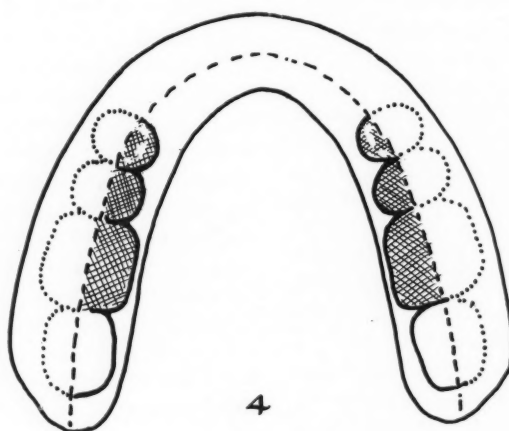
Selection of Posterior Teeth—Among the currently available flat plane teeth some are more efficient than others. But regardless of chewing efficiency, flat plane teeth are superior to teeth with meshing cusps; largely because certain mechanical principles cannot be applied fully in the edentulous mouth with cusp teeth.

Improvement in Tooth Design—The change from anatomic forms to specially designed forms would be more complete if it were not for the psychologic barrier which still restrains some dentists. The objections to the newer and more scientifically designed occlusal forms are more prejudicial than practical. Denture patients of today have better preserved ridges than was the case a few years ago, largely because of more appropriate tooth design.⁴

Disadvantage of Meshing Cusps—All dentures with meshing cusps are not failures. But most of the dentures that do fail, are fitted with so-called anatomic teeth. Meshing cusps cause

an unnecessary amount of destruction to the supporting structures and a notable incidence of temporomandibular joint lesions. All the damage to supporting structures and temporomandibular joints, however, is not caused by improper occlusal design; part of it must be attributed to improper tooth arrangement.

Arrangement of the Posterior Teeth—To assure mouth comfort, stability of the dentures, and preservation of the supporting structures it is necessary to comply with certain mechanical laws. Flat plane teeth permit this compliance.



4.

The shaded parts of these teeth represent the working occlusal surfaces on which greater pressure is received than on the unshaded parts. This occlusal scheme "centralizes" the load from side to side as well as from front to back. The lower second molars are used primarily to maintain eccentric balance, and should not ordinarily receive the closing force in centric relation.

Favorable Leverage Assured—Side-to-side instability of dentures is overcome by directing the occlusal load to the lingual side of the dental ridge. This assures favorable leverage. The advantage is not possible when so-called anatomic teeth are used unless these teeth are placed so far lingually that they encroach on the tongue space. Only correctly designed teeth can be set in their natural buccolingual positions and still direct the closing force favorably (Fig. 3).

Stabilization Accomplished—Front-to-back movement can also be reduced by special occlusal design to a much greater extent than is possible with anatomic forms. By decreasing the extent of occlusal area on the first bicuspid and second molars, the second bicuspid and first molars (at the front-to-back center) are made to carry the major portion of the occlusal load, and thus stabilize the dentures (Fig. 4).

Additional Advantage—In flat plane teeth the occlusal surfaces can be aligned parallel with the supporting ridge which is impossible with cusp inclines. When the occlusal surfaces of the teeth are set parallel with the supporting surfaces, there is developed a "stabilizing curve" according to the curvature of the ridge. This reduces

⁴Sears, Victor H.: Thirty Years of Nonanatomic Teeth, J. Pros. Dent. 3:596-617 (Sept.) 1953.

the anteroposterior sliding of the denture base on the ridge.

Stressful Position Not Induced—With flat plane posterior teeth the condyles are not forced or held in a strained position. The possibility of this damage is becoming more generally recognized, and with it an increased appreciation of the flat plane design.^{5,6}

Setting of Specially Designed Posterior Teeth—Each tooth should be placed buccolingually so that it makes the same contact with cheek and tongue as did the natural tooth it replaces, while at the same time its working occlusal surface should lie well to the lingual side of the supporting ridge. The teeth must be specially designed to achieve this result.

Protrusive and Lateral Balance—Both protrusive and lateral balance can be produced with the appropriate inclinations of the lower second molars. The tooth-by-tooth setting of flat plane teeth and the method of obtaining protrusive and lateral balance with the lower second molars have been described in the dental literature.^{7,8}

Materials for Posterior Teeth—Both

porcelain and resin possess desirable and undesirable properties for posterior teeth. Because of the prolonged development of porcelain material, resin teeth suffered by comparison when they were introduced. Improvements in resin teeth, however, have largely disproved early criticism.

Combination Material Satisfactory—Porcelain resists abrasion better than resin, but resin feels and sounds softer than porcelain. This being true, some way to increase the resistance to abrasion with resin and at the same time soften the harshness of porcelain is wished for. Fortunately it has been discovered that this can be done satisfactorily by occluding porcelain to resin.⁹ Although it was a surprise to many operators, laboratory and clinical tests prove that this combination

⁵Sears, Victor H.: Mandibular Condyle Migrations as Influenced by Tooth Occlusions, *JADA* 45:179-192 (Aug.) 1952.

⁶American Equilibration Society: Treatment for Returning the Lower Jaw to a Condition of Equilibrium, *Den. Survey*: pp. 1519-1520 (November) 1959.

⁷Sears, Victor H.: The Selection and Management of Posterior Teeth, *J. Pros. Den.* 7:723-737 (Nov.) 1957.

⁸Sears, Victor H.: Centric and Eccentric Occlusions, *J. Pros. Den.*, in proof, scheduled for publication 1960.

⁹Sears, Victor H.: Academy of Plastic Research Award for development of porcelain-to-resin occlusal scheme, 1955.

of materials resists abrasion ten times as well as when resin is occluded to resin, so that the advantage of porcelain to porcelain respecting wear is no long significant. Since 1956 many thousands of patients have been fitted with porcelain-to-resin combination and the results have proved highly gratifying to patient and dentist.

Harshness of Porcelain Reduced—When the upper teeth are of porcelain and the lower ones of resin, for example, it is possible to make the cutting edges of the upper teeth sharper without danger of chipping than is possible with porcelain to porcelain. At the same time, the harshness of porcelain to porcelain so objectionable to some patients is overcome.

General Advantages—As a result of improvements described in the selection and arrangement of posterior teeth less time is required for postinsertion adjustments, dentures can be made more acceptable to patients, and the dental ridges as well as the temporomandibular joints are better protected.

646 Washington Street

Bell's Palsy—A Medical Emergency

DAVID D. COHEN, M.D., Calabasas, California

Sudden, spontaneous interruption of the function of the seventh cranial nerve is no longer treated expectantly. It must be dealt with as a medical emergency to relieve the ischemia of the nerve in the facial canal. The ischemia results from vasospasm and is aggravated by reactive edema. The pathological pro-

cess is that of ischemic neuritis. Treatment should be started as soon after the onset of paralysis as possible, preferably within the first 48 hours. It consists of blocking the stellate ganglion and administering nicotinic acid parenterally to achieve vasodilation and administering corticosteroids to reduce ed-

ema. Although in most cases recovery is spontaneous, the possibility of permanent distressing sequelae, such as residual paralysis, contracture, associated movements, and hemifacial spasm makes prompt treatment essential.

From *Journal of the American Medical Association* 173:1563 (Aug. 6) 1960.

A New Single Belt ULTRA-SPEED

Dental Contra-Angle: A Progress Report

HAROLD C. KILPATRICK, D.D.S., New Canaan, Connecticut

DIGEST

Since 1955, numerous ultra-speed contra-angles have been introduced to the dental profession. These handpieces are propelled by belts, gears, or air. All have been of value to both dentist and patient by reducing the vibration during tooth reduction and decreasing the preparative time of dental procedures. Some limitations of these contra-angles, however, have become evident with their extended use. This article describes a new handpiece with definite improvements in design and functional ability.

Types of Handpieces Employed

The various ultra-speed instruments which have been in use since the introduction of this type of device have both advantages and disadvantages. Comparison of some of these functional limitations is made in the fol-

lowing discussion of several ultra-speed contra-angles.

Belt-Driven Handpieces—The first ultra-speed contra-angle was introduced in 1955^{1, 2} and was propelled by a single belt within the sheath of the contra-angle which in turn was powered by another belt from a dental engine. All handpieces of this type had excellent cutting ability and instantaneous foot control but developed more vibration than the turbine-propelled contra-angles and lost power when the contra-angle was used in certain positions. At high speeds they are quite noisy. They also have spray lines hanging at the back of the contra-angle which tangle with other equipment.

Air Turbines—The air turbines have excellent cutting ability at high speeds but lose torque at the lower

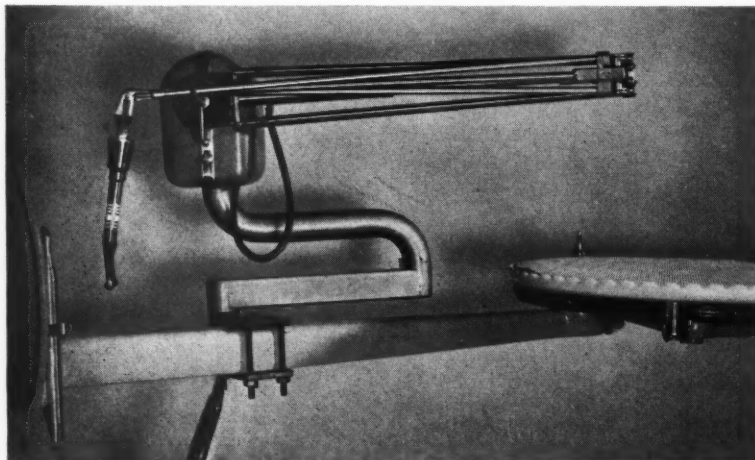
speeds. Even with a variable foot control the air turbine did not produce as much versatility as the belt drive. The turbine, however, has the advantage over the belt drive because of fewer moving parts and no loss of speed in any position. It is also not dependent on the dental unit for its control. The turbine has only a little handpiece drag but some operators and patients complain of its high pitched whine.

Gear-Driven Ultra-Speed Contra-Angle—The gear-propelled ultra-speed contra-angle has good cutting ability but develops more vibration than the belt or turbine contra-angle. It is also heavy in comparison to the others and requires a continuous oil mist injected into its gear mechanism.

First Single Belt Handpiece—The first single belt ultra-speed contra-angle was manufactured by the Globe Research Company in 1956. This handpiece had good cutting ability but also had some limitations. The most important limitation was that no provision was made for the belt crossing itself when used in some positions. This resulted in rapid belt wear. Also the belt could easily become saturated with moisture which caused additional uncertain performance. In addition, the changeover to a low speed handpiece was quite time consuming.

¹McEwen, R. A.: Accelerated Handpiece Speeds in Restorative Dentistry, New York D. J. 21:475 (December) 1955.

²Kilpatrick, H. C.: Trauma Reduction in Cavity Preparations Utilizing Rotational Speeds in Excess of 60,000 r.p.m., DENTAL DIGEST 62:202-205 (May) 1956.



1.
Page-Chayes 909 mounted on the bracket table arm of a dental unit. The shielded belt runs continuously from a large formica pulley on a special engine to the cutting tool spindle in the handpiece. Spray lines are contained within the middle tubing of the engine arm.



Description of New Handpiece

The new single belt ultra-speed contra-angle called the Page-Chayes 909 eliminates many of the disadvantages of all types of contra-angles. The instrument was developed by Richard Page, D.D.S. who invented and designed the first belt-driven contra-angle. It has self-contained spray lines within the contra-angle and engine arm which eliminates dangling spray tubings. The contra-angle itself resembles the early model Page-Chayes and has a conventional contra-angle offset. The head size is slightly smaller than most standard ultra-speed contra-angles but not as small as the miniature head air turbines.

Special Single Belt—The continuous single belt is made of specially constructed plastic material and its diameter is slightly larger than a light test fishing line. The belt runs directly from the engine pulley to the cutting tool bearing spindle.

Belt Shielding Arrangement—The belt is prevented from crossing over on itself by an ingeniously designed wrist joint and arm assembly which can be pre-set to allow free access to any part of the mouth. The speed is constant in all excursions of the hand-

2. *Foot control for the 909 handpiece is in the center. This controller can eliminate the other controls on either side. The first position of the speed control activates a chip blower on the handpiece. Further rotation to the right engages the spray and increases the speed in a continuous flow without steps. The middle lever is used to change to another handpiece. The top lever changes the volume of the spray. When this lever is all the way to the left of the slot, air alone comes through the handpiece. Gauges on the controller top indicate air and water pressures.*

piece, eliminating the annoying speed fluctuation encountered with standard wrist joints.

Separate Engine Employed—The contra-angle is powered by its own engine; a top speed of over 210,000 r.p.m. may be attained. The speed may also be throttled down to 1,500 r.p.m. when desired.

Separate Universal Foot Control—The foot controller for the Page-Chayes 909 has arrangements for a foot-controlled chip blower, air, water shut-off, and may be linked to the regular dental engine and any air turbine. This offers the operator one foot control center for a variety of operations. The foot control box has a filter for eliminating moisture from

the air lines and valves for adjusting air and water flow. Gauges indicate the amount of pressure for both water and air.

Performance of 909—The following advantages are important:

1. In use the handpiece has a feeling of being light as a feather. Even at the highest speed, in comparison to other ultra-speed contra-angles, the mechanism is quiet.

2. The cutting ability is extremely good and permits the operator an excellent tactile sense.

3. At low speeds the instrument cuts with little torque loss and with slight vibration.

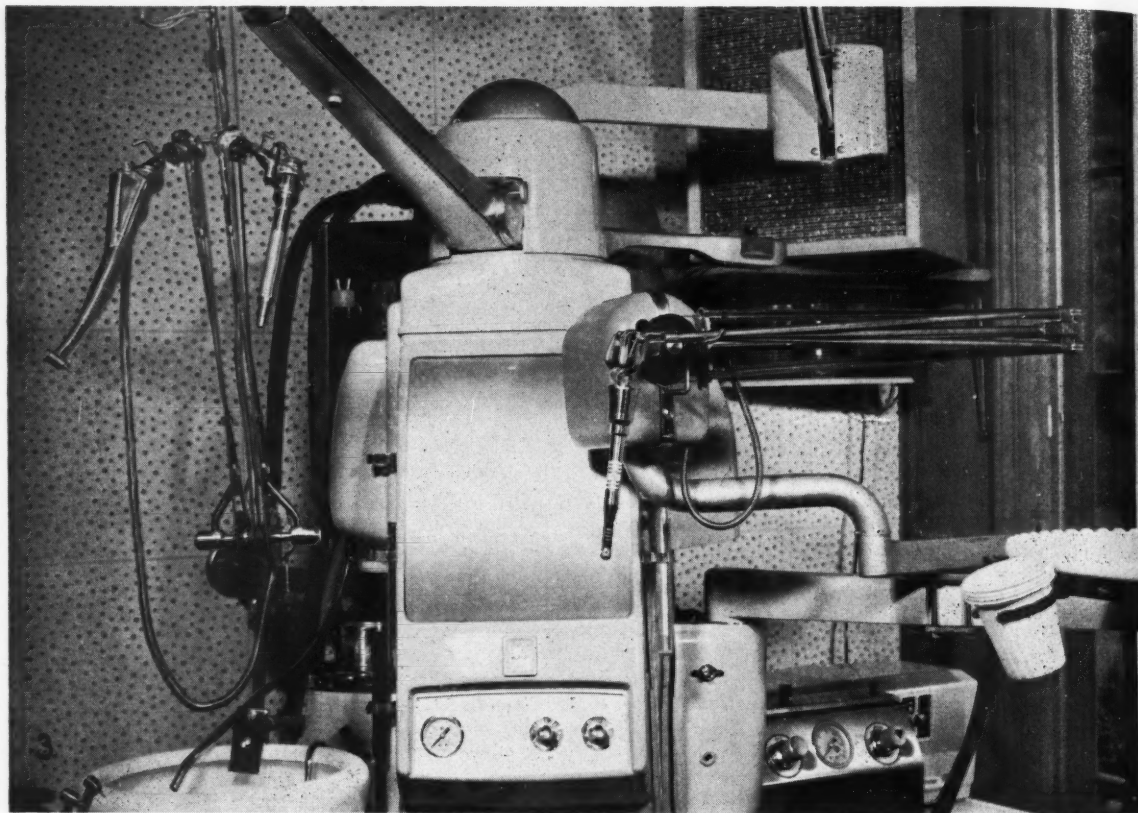
4. The chucking arrangement has a metal insert in a rubber sheath. This ensures a true running cutting tool and a firmly gripped shank.

5. A special bur removal tool is used for cutting tool changing.

6. The coolant is of a spray type and is directed down the cutting tool. The spray is arranged so that the water issues through a center tube with an outer concentric tubing which ejects the air. This results in adequate coolant and also keeps the preparation area clear of cutting debris which improves visibility particularly in upper areas.

7. Patient acceptance is excellent.

Foot Control Center—The foot con-



trol offers a chip blower of straight air when engaged in its first position. When advanced, the spray also becomes activated along with the cutting tool rotation. Another foot-controlled lever changes the volume of the spray. This obviates the motion of using a hand-controlled valve.

Speed Flow Smooth: The speed control is stepless and eliminates a jump from one speed to another. This has a smoother flow of speed and allows the operator to "feel out" the optimum operating speed for the area he is cutting. Often the fastest and smoothest cuts are at a lower r.p.m. than the highest speed. Levers are provided for changing over to the unit engine or an air turbine.

Adaptability of Instrument: The 909, because of having its own engine, water, air, and foot controller, does not need to be mounted on a dental unit but can be mounted on its own pedestal, wall, or other suit-

3. *On the left is shown the belt driven ultra-speed contra-angle, and ball bearing straight handpiece mounted on the Dual Arm Transmission powered from the dental unit. Page-Chayes 909 with its own engine is shown on the right.*

able area. When used with a dental unit, the bracket table arm serves as a base for mounting. The 909 can also be adapted as a self-contained, portable assembly needing only an electric connection.

Maintenance—All wearing parts of the 909 can be replaced by the operator. The belt can be replaced in about 5 minutes and all pulleys, ball bearing idlers, and head bearings can be replaced in a short time.

An air seal acts continuously when the contra-angle is in motion to keep moisture and impurities from entering the head bearings. The chuck is

extremely long wearing but can also be replaced by the operator when necessary. The motor requires routine brush inspection and oiling when indicated.

Summary

A single belt ultra-speed contra-angle has been described. The handpiece has its own engine, variable foot control, chip blower, air, and water controls. The arrangement can be serviced by the operator.

The instrument produces considerably less noise than previous ultra-speed contra-angles, and dangling spray tubings are eliminated. It can be used with acceptable torque and little vibration at much lower speeds than air turbines. The foot controller may be linked with other handpieces. Patient and operator acceptance is high.

Smith Ridge Road

The EDITOR'S Page

A HIGH INDEX of suspicion toward any lesion in the mouth that does not heal in two weeks may be a life-saving measure. A tooth that loosens for no apparent reason and enlarged lymph nodes in the neck are other signs that may point to cancer.

The editor of *Cancer Bulletin* (R. L. Clark, Jr., M.D.) has remarked: "The dentist may be the first to detect cancer of the head and neck, because many persons are more conscientious about dental examinations than about medical check-ups. In addition, the dentist is often consulted about symptoms which the patient erroneously attributes to dental disorders. Because of the danger of cancer, the reason for any abnormality in the head and neck area should be ascertained promptly."¹

The dental examination has usually been a routine search for caries, periodontal disease, and edentulous areas to be restored. It is the unusual dentist who extends his examination to include an inspection of the tongue, the cheek, the floor of the mouth.

Speakers at a symposium held at The University of Texas M. D. Anderson Hospital and Tumor Institute suggested that the dentist expand his field of examination: "Many early cancers could be detected by routine examination of the intraoral cavity surfaces, by inspection of the mucous membranes for ulceration, and by palpation for induration. The tongue and the floor of the mouth should be examined in all aspects, because a lesion in these areas is not readily discernible. Any fissures, swelling, bleeding, or other abnormalities should be investigated. One point made in the panel discussion was that pain is not usually an early indication of intraoral cancer, but an ulcerated lesion may become secondarily infected, and therefore, painful. Another point of interest to the dentist is that loose teeth, especially when one tooth is loose and the adjacent teeth are firm, may be a sign of primary or metastatic cancer of the jaw."

Apparently cancer is increasing. In addition, as

more of our people live into the later decades we will see more cancer. At this time there is no specific treatment. Surgery and radiation remain the most effective methods of treatment. Cytotoxic agents and chemotherapeutic substances (such as nitrogen mustard) that interfere with cellular metabolism and the mitotic sequence hold some promise. A French investigator of the Pasteur Institute (Alexander Berglas) has proposed that an artificial stimulant to force the increase of cell numbers and the premature division of cancer cells might create an environment wherein the cancer killed itself.² No such biologic agent has been discovered.

There may be some substantiation for the theory that the human organism fails to adjust to the noxious substances in which man lives. Many such vectors have been introduced into the environment in the last 60 years. The organism is thousands of years old and has had time to make suitable adjustments up until the past half century when "progress" has been accelerated.

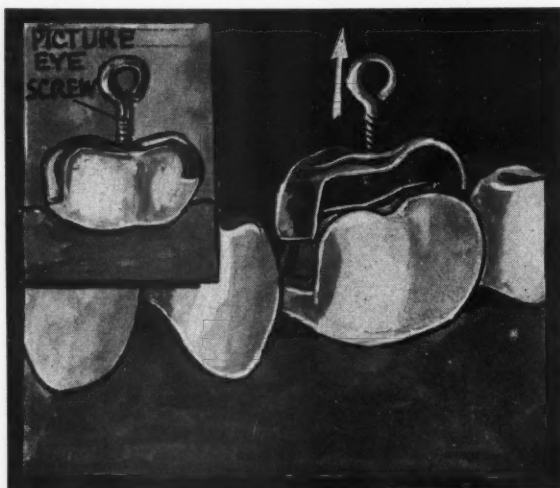
Berglas considers this point of view:

"Statistics show that cancer has been sharply on the increase during the last fifty years. Accounts of regions free from cancer reveal the influence of civilization on the process of cancer. This influence resides in the totality of civilizational noxae, that is, stresses of chemical, physical, nutritional, and environmental nature. We are faced with the grim prospect that the advance of cancer and that of civilization parallel each other.

"Modern industrial practices resulted in defects in our nutrition as well as increasing the carcinogenic noxae in our environment and food. The existing symbiosis among the soil, plants, and man is drastically disturbed."

The dentist has no responsibility in the *treatment* of the patient with cancer. His role is to be alert to discover and prompt to refer patients to qualified medical talent. The greatest contribution that the dentist can make in the fight against cancer is to develop a "high index of suspicion."

¹From Panel Discussion, *Cancer Bulletin* 12:24 (March-April) 1960.
²Berglas, Alexander: Cancer, Nature, Cause, and Cure, Paris, Institute Pasteur, 1957.

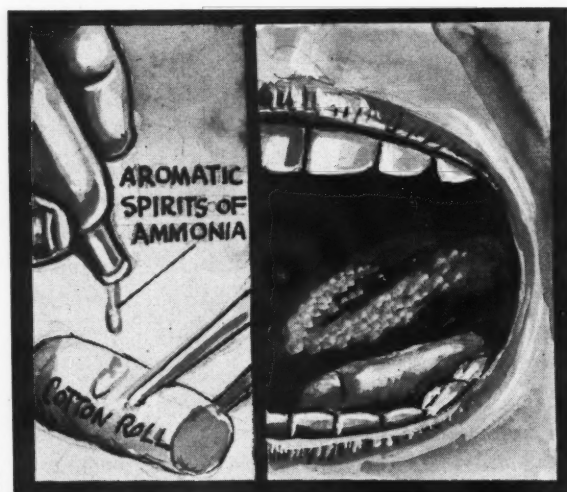


Clinical and Laboratory

Removal of Large Inlays or Crowns

B. Dienstbier, D.D.S., Omaha, Nebraska

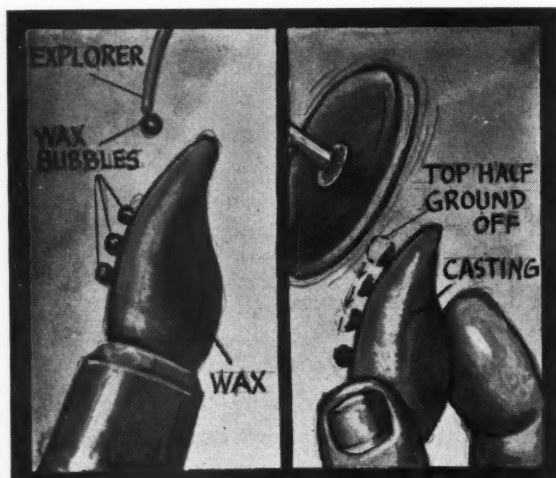
1. Select two picture frame eye screws. Grind a tip from one. Make a bur hole in the occlusal of the inlay or crown. Thread the pointed eye screw in the hole until the cement is reached. Remove the screw and insert the one with the blunt end. Tighten the screw until the restoration is lifted from the tooth.



Prevention of Gagging

Harold A. DeHaven, D.D.S., Christiansburg, Pennsylvania

2. When cotton rolls under the tongue cause the patient to gag relief may be secured by putting several drops of aromatic spirits of ammonia on the cotton rolls.



Securing Retention in an Acrylic Veneer Crown

William E. Chetwood, D.M.D., Lewiston, Idaho

3. Drip small bubbles of wax from an explorer on the facial surface of the veneer wax-up. After the casting is made grind away the top half of the "bubbles." This will allow more room for the acrylic and will create undercuts for retention.

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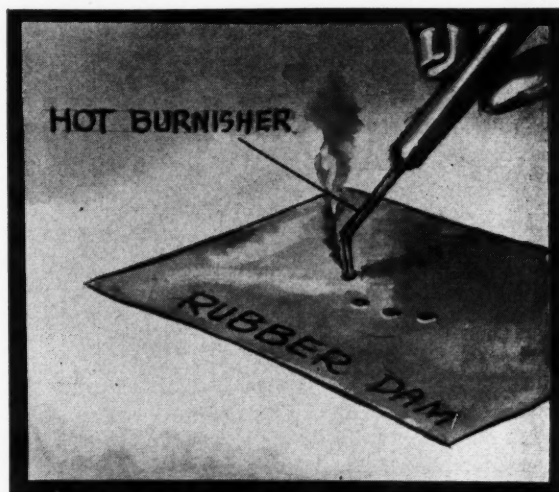
You do not have to write an article. Furnish us with rough drawings or sketches, from which we will make suitable illustrations; write a brief description of the

to SUGGESTIONS . . .

Tear-resistant Holes in Rubber Dam

John C. Barrett, D.D.S., Freeport, Illinois

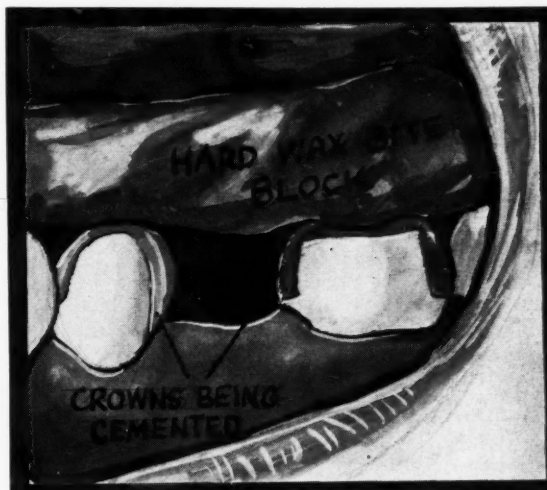
4. Heat a small ball burnisher to redness and then insert in rubber dam to make a smooth, round roll-edge hole that will not tear.



Cementing Restoration Where the Opposing Jaw is Edentulous

H. Lambert, D.D.S., Hicksville, New York

5. Use a bite-block in the edentulous area to make pressure against the restoration being cemented in the opposing jaw.



Topical Stannous Fluoride

T. J. Deutsch, D.D.S., Kalisell, Montana

6. A few drops of mouthwash added to the stannous fluoride solution will make the solution more pleasant tasting.



technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time. Turn to page 528 for a convenient form to use.

Send your ideas to Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.



Shoulder Disability from Neck Dissection

A radical neck dissection for cancer must include excision of the spinal accessory nerve to be entirely successful. Varying degrees of shoulder disability result from loss of the nerve, palsy of the trapezius muscle, muscle imbalance, displacement of the shoulder girdle, and periarthritis. Patients may also be disabled because of injury to the upper cervical nerves and removal of the sternocleidomastoid, omohyoid, strap, and other muscles.

The affected shoulder is displaced anteriorly, laterally, and inferiorly. The anterior axillary fold is lowered and the clavicle is prominent, running almost horizontally or downward. The supraclavicular fossa is deep and wide due to loss of contents and atrophy of the trapezius.

The scapula is displaced laterally and inferiorly and is rotated inferiorly. The median and superior margins, the superior and inferior angles and the spine of the scapula are prominent.

The rotating and fixing functions of the trapezius muscle are lost. Abduction in the scapulohumeral joint is limited to 45 to 80 degrees. Elevation in the anterior and anterolateral directions, however, is not extensively impaired.

A frozen shoulder may occur because of muscle inactivity and imbalance, paralysis, pain, and periarthritis. The most significant factor in disability is pain in the affected shoulder and neck. The pain varies in intensity but tends to be constant. The cause is often difficult to determine. Traumatic neuroma and muscle fatigue due to chronic imbalance may aggravate distress.

The damage is permanent. Treatment, therefore, can be only symptomatic. Sedatives, analgesics, and local application of heat help alleviate discomfort. Elevation of the affected arm in a sling provides temporary relief. Often shoulder exercises may prevent or lessen frozen shoulder and periarthritis.

Szunyogh, Bela: Shoulder Disability Following Radical Neck Dissection, Am. Surgeon 25:194-198 (February) 1959.

MEDICINE

and the Biologic Sciences



Hypertension in Ambulatory Patients

It is apparent that blood pressure elevation for a prolonged period of time will definitely produce vascular changes in the brain, the heart, and the kidneys. An effective reduction of blood pressure may completely arrest the vascular changes regardless of the method used for this reduction. Although the changes may be arrested, renal function rarely returns to normal.

Hypertension aggravates and hastens the development of arteriosclerosis. Reducing the blood pressure arrests this hastening process but still arteriosclerosis progresses, just as it does in the normotensive person.

The method used for reduction of blood pressure is probably not important, insofar as arresting the vascular changes associated with hypertension is concerned. The important thing is that blood pressure be reduced effectively.

The surgeon can accomplish a reduction, particularly when he employs current medical therapy with surgery. These are the more severe cases where sympathectomies are required. In some mild cases it is possible for the

psychiatrist or the general practitioner or the internist who carries psychiatric overtones to "talk the blood pressure down."

A multipronged approach is necessary depending on the severity of the hypertensive disease. Mild hypertension can be controlled with chlorothiazide, given to deplete body sodium by increasing its excretion. The administration of this drug may be continued indefinitely as a background medication for all antihypertensive drugs. This is probably the most effective measure for the reduction of blood pressure. Then the sympathetic nervous system is blocked by various methods. The centrally acting drugs are used first. The commonest ones are rauwolfia and hydralazine. Usually in milder cases rauwolfia may be given an initial trial alone, and if the patient needs additional therapy, he may receive hydralazine. In patients with moderately severe hypertension, hydralazine combined with rauwolfia may be given a therapeutic trial.

For patients with more severe hypertension, when the diastolic blood pressure is fixed above 120 to 130 millimeters Hg, the use of ganglionic blocking agents such as mecamylamine or pentolinium is indicated. Records indicate that treatment of patients with malignant hypertension has completely altered the cause of death. When treatment was started as long as the blood urea nitrogen level was normal, the patients rarely die of renal failure. The cause of death in treated patients usually is a cerebrovascular accident or a coronary occlusion.

Moyer, J. H., and Beem, J.: Treatment of Hypertension in the Ambulatory Patient, Am. J. Cardiol. 3:199-213 (February) 1959.



Early Symptoms of Psychoses

Common psychoses are melancholia, schizophrenia, and manic states. Often these are associated with cardiovascular disease and old age.

Persons with melancholia frequently commit suicide and occasionally murder their spouses or children.

(Continued on page 526)



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Some describe suicidal thoughts in detail and the patient may promise not to end his life without first telling the physician.

Some melancholy persons do not mention depression but describe chest pain, indigestion, urinary disorders, or other symptoms. Insomnia, impotence, loss of interest, and change of habits are common. In early cases, much useful information can be obtained from the relatives, especially regarding change of habits.

Electroconvulsive therapy is justified if occupation, relaxation, sedation at night, and amphetamine in the morning do not produce improvement within a few weeks.

Most of the early symptoms of schizophrenia can be ascribed to introversion, ambivalence, and failure in communication. The patient, who is usually young, often changes insidiously, becoming withdrawn, apathetic, and lazy. Thoughts and moods do not seem to harmonize, feelings are mixed, conduct is illogical, and behavior is unpredictable. Words have changed meanings and signs, grimaces, gestures, and other primitive means are

used for expressions of feelings.

Observation for a week or two with the aid of sedatives or tranquilizers may be necessary to establish the diagnosis. Insulin coma therapy seems most effective.

Cerebral arteriosclerosis is often first recognized by an associated depression, blankness of expression, poverty of thought, confusion, personality changes, and emotional instability. The patient is generally aware of mental failure. Symptoms fluctuate and neurologic signs are apparent. Nicotinic acid and thiamine are worth trying. Paraldehyde may be used in crises.

Hypertensive patients may have anxiety symptoms, nocturnal restlessness, frightening dreams, clouding of consciousness, slow cerebration, personality changes, and dementia. Crises may occur and residual impairment increases with each attack. Prognosis is better than with arteriosclerosis.

Cardiac insufficiency is often associated with anxiety, apprehension, hallucinations, and paranoia. The symptoms usually disappear when heart function improves.

Dax, E. Cunningham: The Early Symptoms of the Psychoses in General Practice, M. J. Australia 2:718-722 (December) 1958.



**Lead Poisoning in
Children**

The usual source of lead poisoning in children is paint from walls, woodwork, plaster, furniture, and toys. Intoxication from inhalation of lead fumes is infrequent. The incidence of plumbism is greater in summer because increased vitamin D aids in the absorption of lead, and more frequent dehydration and acidosis mobilize lead from deposits.

Most patients are between 1 and 4 years of age and live in slums or blighted areas where loose plaster and flaking paint provide a rich supply of lead. Such children are often emotionally unstable, and the mother-child relationship is usually poor.

Symptoms are nearly always related to the gastrointestinal tract or central nervous system. Anorexia, vomiting,

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constipation, abdominal pain, irritability, convulsions, drowsiness, incoordination, and pallor are common. Minor gastrointestinal symptoms and lethargy may precede the onset of more serious symptoms by as long as two weeks. Lead lines in the gingivae, often seen in adults, are quite unusual in children.

The brain may manifest edema, punctate hemorrhage, gliosis, and focal necrosis while the liver and kidney show characteristic acid-fast intranuclear inclusions. Degeneration of anterior horn cells is frequent. Bones contain the greatest amount of lead, and the brain the least.

Almost all children have significant anemia with basophilic stippling of the red cells and an elevated reticulocyte count. Lines of increased density in the metaphyses of long bones are common on roentgenograms.

The diagnosis is confirmed by demonstrating high levels of lead in the blood and urine. The degree of elevation, however, does not correlate with the severity of the illness.

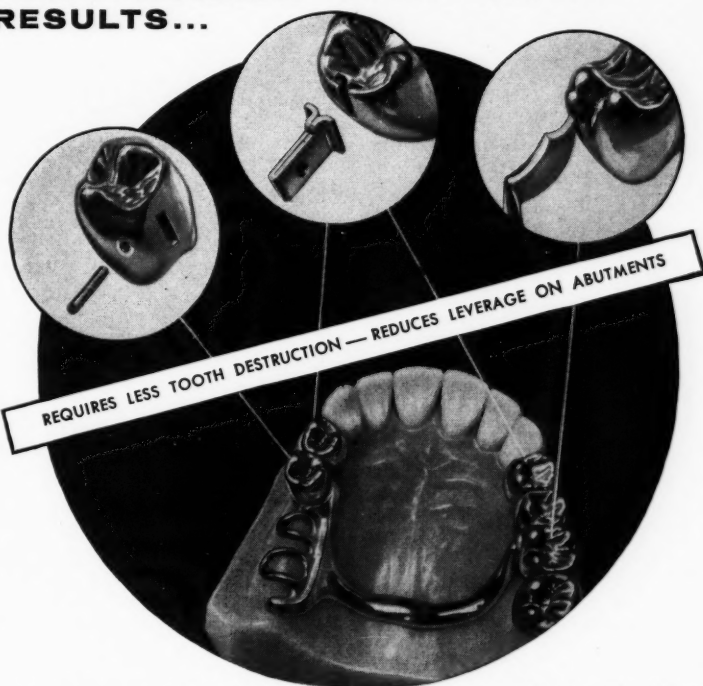
Treatment is with calcium disodium ethylenediamine tetraacetate, which is a safe and effective chelating agent that binds the lead into a nontoxic complex easily excreted in the urine. Toxic effects from the drug are rare. The dosage is 30 to 75 milligrams per kilogram per twenty-four hours intravenously or subcutaneously. The drug is given for three to five days, discontinued for two to three days, then given for another three to five days. Oral use of the preparation is unsatisfactory.

Prognosis depends on severity and duration of the illness. The usual mortality is 10 to 25 per cent. Children who die almost always have severe encephalitis. Important neurologic sequelae, including paralysis, blindness, and organic brain damage in the area of visual motor function and language skills occur in 25 to 75 per cent of cases. Residuals are correlated with continuing pica.

Counseling directed at cessation of pica is an effective tool in the prevention of continued lead poisoning. Education of the public, inspection and repair of substandard housing, and more stringent laws regarding lead-

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containing paints are other important measures in prevention.

Cohen, George J., and Ahrens, Walter E.: *Chronic Lead Poisoning*. *J. Pediat.* 54:271-284 (March) 1959.



Gastric Lesions with Pernicious Anemia

Stomach lesions seen with pernicious anemia appear to be the end result of inflammation rather than a specific disease caused by an endo-

crine or nutritional deficiency. Gastric biopsies from persons with the hematologic disease reveal an inflammatory gastritis with a widespread cellular infiltrate. Complete gastric atrophy is probably the final stage of the inflammatory process.

The changes in the gastric mucosa are probably of endogenous origin. Perhaps lack of the intrinsic factor or its precursor prevents maintenance of normal structure and function.

The cells near the surface of the
(Continued on page 528)

CLINICAL AND LABORATORY SUGGESTIONS

(See page 522 and 523)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

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708 Church Street
Evanston, Illinois

From: _____

Subject: _____

Explanation of Procedure:

Sketch:

Suggestion submitted cannot be acknowledged or returned.

\$10 will be paid on publication for each suggestion that is used.

body mucosa of the stomach apparently secrete the intrinsic factor, which may be a reactive group present in one or more mucoproteins.

If manufacture of the intrinsic factor or its precursors is insufficient, the gastric lesion and subclinical vitamin B₁₂ deficiency may develop simultaneously. Therefore, gastric atrophy typical of pernicious anemia sometimes occurs without signs or symptoms of the blood disease. Some persons have advanced gastric atrophy for years before peripheral blood and bone marrow changes are seen. Labeled B₁₂ absorption studies show that such patients absorb as little radioactive B₁₂ as do patients with pernicious anemia. Relatives of persons with pernicious anemia frequently absorb subnormal amounts of radioactive B₁₂.

After adequate therapy for pernicious anemia, the gastric lesions remain unchanged. This observation also supports the hypothesis that the gastric lesions are due to lack of intrinsic factor or its precursor.

The chances of a patient with pernicious anemia having cancer appear to be 2 or 3 times greater than might be expected in the population as a whole. The longer a person with pernicious anemia lives, the greater is the likelihood that gastric cancer will develop. In many patients with pernicious anemia, the atrophic site is replaced by islands of intestinal epithelium. Extensive intestinal metaplasia may be a precancerous state.

Magnus, H. A.: A Re-assessment of the Gastric Lesion in Pernicious Anemia. J. Clin. Path. 11:289-295 (September) 1958.

Partial Facial Paralysis in Young Children

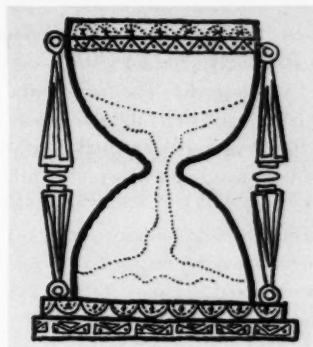
DICK HOEFNAGEL, M.D., and
CAPTAIN J. KIFFIN PENRY, (MC),
USAF, Boston

Untypical Features

Among the children referred for evaluation of facial paralysis, it was noted that a number did not show the typical features of either a central or com-

(Continued on page 530)

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plete peripheral paralysis of the face:

(1) The face at rest had no noticeable asymmetry, but on smiling or particularly when the children cried, there was a strikingly characteristic asymmetry of the lower lip. The frontalis muscles contracted well; the eyes closed normally and resisted equally on both sides attempts by the observer to open them.

(2) The nasolabial folds either were well formed or showed a minimal flattening on the affected side.

(3) The lower lip on the involved side remained immobile or became slightly flattened. The unaffected side protruded and was drawn downward and outward to a marked degree, resulting in a prominent asymmetry of the oral aperture.

(4) The "pouting" of the lower lip, so typical in the appearance of the crying child's face, was present only on the unaffected side.

(5) There was no actual displacement of the mandible. The physician confronted with such a case must realize that the side that droops during crying is the normal side and not the paralyzed one.

Muscles Responsible for Shape of Lower Lip

These are the mentalis and the quadratus labii inferior, the so-called lower lip depressors.

Mentalis Muscle (Musculus Levator Menti)—Its origin is in the incisive fossa of the mandible and descends to its insertion in the skin of the chin. Its function is to raise and protrude the lower lip.

The Quadratus Labii (Musculus Depressor Labii Inferioris or Musculus Quadratus Menti)—Originates from the oblique line of the mandible between the symphysis and mental foramen. It passes upward and medially to insert in the subcutaneous tissues of the lower lip. Some of its fibers blend with those of the orbicularis oris, platysma, and quadratus labii inferior of the opposite side. This muscle contains a good deal of fatty tissue. Its function is to draw the lower lip downward and laterally.

Innervated by Branch of Facial Nerve—The mentalis and the quad-

ratus labii inferior muscles are innervated by a single branch of the facial nerve. This branch, the ramus marginalis mandibulae, emerges from the cervicofacial trunk of the facial nerve and runs closely parallel to the inferior edge of the mandible before crossing it, to divide into the smaller muscle branches.

Frequent Occurrence of Condition—The surgical anatomy of the ramus marginalis mandibulae has been extensively discussed and the frequent occurrence of the condition under discussion has been pointed out. Two types of cases in childhood are mentioned: (1) those that followed incision and drainage of an abscess at the angle of the mandible; and (2) those whose paralysis represented a residual finding after spontaneous regression of a complete peripheral facial paralysis. Obstetric trauma must be considered a possible cause although a history of trauma may be lacking.

Surgical Correction

To correct the facial asymmetry resulting from this type of partial weakness, a modification of neurectomy of the ramus marginalis mandibulae on the healthy side is completed. This paralyzes the two lower-lip depressor muscles on that side and restores symmetry in facial expression. Before the actual neurectomy is decided upon, the nerve is temporarily blocked by the injection of procaine hydrochloride near the angle of the mandible.

Procedure Successful—The results of this procedure in 7 adult patients were reported as uniformly good:

(1) The patients were not inconvenienced by the moderate reductions in the size of the oral aperture, and speech was not altered.

(2) The scar was minimal, and there were no recurrences.

(3) Sensory deficit was not observed and not expected in view of the fact that the nerve is purely motor.

Case Analyzed

A male infant was delivered by Cesarean section after a forty weeks' gestation. The birth weight was 3.5 kg. (7 pounds, 11 ounces). The facial

asymmetry was noted during the examinations in the newborn nursery. There was no asymmetry of the mandible, and the remainder of the examination was unremarkable. The child was not seen again until the age of nine months, when the abnormality of the lower lip was unchanged. In addition a severe right-sided internal strabismus was present.

Defect Appears in Crying—The asymmetry of the lower lip caused by left-sided weakness of the lower lip depressors appeared when the patient cried. The right ramus marginalis mandibulae was temporarily blocked by the injection of 1.5 milliliters of 2 per cent procaine hydrochloride near the angle of the right mandible. This eliminated the action of the right lower lip depressors and abolished the facial asymmetry.

Surgical Procedure not Applied to Children—Neurectomy of the ramus marginalis mandibulae in these children has not been considered because the defect appears to be of cosmetic significance only. The procedure may require consideration, however, in older children and adults, for in cases of severe asymmetry, the abnormality may be extremely noticeable during speech.

True Pathogenesis Unknown—The area involved and the age of the patients have precluded studies by conventional techniques such as muscle biopsy and electromyography. The true pathology and pathogenesis of the abnormality is therefore unknown. Evidence of the presence of a congenital absence of the involved muscle or of a lesion of the nerve itself is not present. The role of intrauterine posture (pressure of shoulder on the angle of the mandible) or the effect of the birth process itself on the pathogenesis of the lesion could not be ascertained.

Summary

A characteristic form of partial facial paralysis due to unilateral weakness of the lower lip depressor muscles is described.

Adapted from *New England Journal of Medicine* 262:1126 (June 2) 1960.

Contra-Angles



Calories Anonymous

MOST OF US have found that it is easier to spend money than it is to save money. Most of us have also found that it is easier to deposit calories in our "caloric account" than it is to withdraw them. Spending money comes easy, saving on a low-calorie budget comes hard.

Some enterprising organizer should have thought to an association *Calories Anonymous* (CA) that would make us aware how helpless most of us are in the face of the extra calorie. The nibbler usually denies his vice. The "coffee break" addict forgets to subtract the sugar, the cream, the sweetener. The peanut-popcorn-potato chip eater ignores these extra tidbits. The s's d'œuvres and cocktails are contentedly forgotten when the calorie audit is made.

The editorial staff of this journal has prepared a DIAL-DIARY OF NUTRITION that is used to help people keep an accurate account of their calorie deposits. This is the way it works: At the end of one week an exact count is made of everything that is eaten or drunk, or between meals. The DIARY is used for that purpose. At the end of the week the DIAL is used to audit the calorie account. The DIAL also gives nutritive values (protein, fat, carbohydrate, calcium, iron, vitamin A, niacin, (B₁), riboflavin (B₂), vitamin C, and ascorbic acid (C) for 200 common foods. You will be surprised how you perform this test to discover how generous your deposits in calories have been and how low the intake has been in many essential nutrients.

The nutrition audit is not a game. It may be the most important self-examination you have ever made, more than a spiritual appraisal. It

(Continued on page 532)

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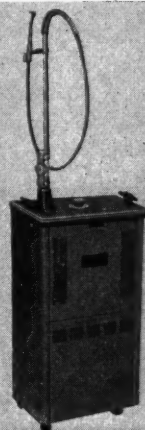
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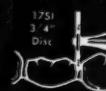
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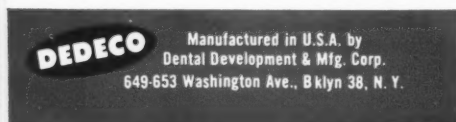


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Physiologists and pathologists are
agreed that too much food and drink
plus too little exercise equal a major
health hazard. Fortunately, with a
strong dose of will power, we can do

something to curtail our intake and
expand our energy outgo.

A professor of medicine (Herman
K. Hellerstein, M.D., Western Re-
serve University, Cleveland) told the
Chicago Heart Association as reported
in *Medical Tribune*:

"Exercise breaks" would be better
for a sedentary worker's physical fit-
ness than 'coffee breaks.'

"A brisk 15-minute walk to and
from the coffee machine would at
least help offset the low requirements
of energy characteristic of most job
activities today.

'He was highly critical of the rou-
tine followed by many physicians and
business men. 'While his occupation
is highly skilled, it requires little in
the way of energy requirements. At
the end of a day of little physical ac-
tivity, he returns home in an auto-
mobile that has power steering and
an automatic shift.'

"He eats a dinner of too many
calories and too many fats, reads a
newspaper, and then places himself
in front of an amusement box which
he enjoys for the rest of the evening.
All this in the face of scientific evi-
dence that indicates that if there is
little physical activity, a person's phy-
sical condition may deteriorate.'"

Man is the highest organism be-
cause he has a Will. He can choose
his ends and set a pattern of behavior
to achieve these ends. True, he also
has instincts. The control of these in-
stincts, however, sets him apart from
other forms of animal life: that is
what makes him human.

Man also seeks pleasure and tries
to avoid pain. If he foregoes an im-
mediate pleasure, such as wallowing
in too many calories, he may avoid
the painful experience of the de-
generative diseases.

I wish I could remember and give
credit to the sage who said: "Do not
blunt the point of seldom pleasure
by constant wear." That advice ap-
plies to all our pleasures—including
food and drink.

There is no reason to get too seri-
ous and philosophical about all this.
Set up your own private chapter of
Calories Anonymous to help your-
self!

Postelection Entertainment

Now that we have a new President
-we should all settle down to support
his efforts in his mortal battle against
Communism. We must show the en-
tire world that on that issue every cit-
izen of the United States is in agree-
ment.

With the spirited election past we
will all turn to other diversions. Many
devotees of television will look for en-
tertainment from that source. A sort
of guide or reference work to help us
interpret the symbolism and status
marks of shows of different types
might be helpful.

The estimable publication *Con-
sumer Bulletin* has given some sug-
gestions to apply to Westerns:

"How to tell the 'goodies' from the
'baddies' in Westerns on television or
in the movies used to be simple. The
good guys wore white hats and those
in black hats were the bad ones. Now,
with psychologists and 'adult' West-
erns, things are a little mixed up, but
short cuts to characterizations are
still in vogue. One TV-radio writer
reports that a liquor cabinet with de-
canters in the foreground and a grand
piano in the background indicates
that the people living there are rich;
a cocktail party at which women are
smoking characterizes the group as
sophisticated, with the host a pub-
lisher, a corporation lawyer, or an
advertising executive. A fast woman
will wear a tight-fitting gown of shiny
material, while a lady will wear a
simple dress, a single string of pearls,
and perhaps white gloves. A happy
husband will be wearing a sleeveless
sweater or a shirt with no coat, will
be sitting in front of a fireplace, or
be smoking a pipe in leisurely fash-
ion, while an unshaven man will have
a hangover, be seriously wounded, or
will have lost his way in the wilder-
ness. For a delightful new parlor
game, figure out your own list of
symbols and what they mean while
you are watching the current screen."

During the long winter evenings
this parlor game may be extended to
other trite types of programs—if you
have nothing better to occupy your
time.

—E.J.R.

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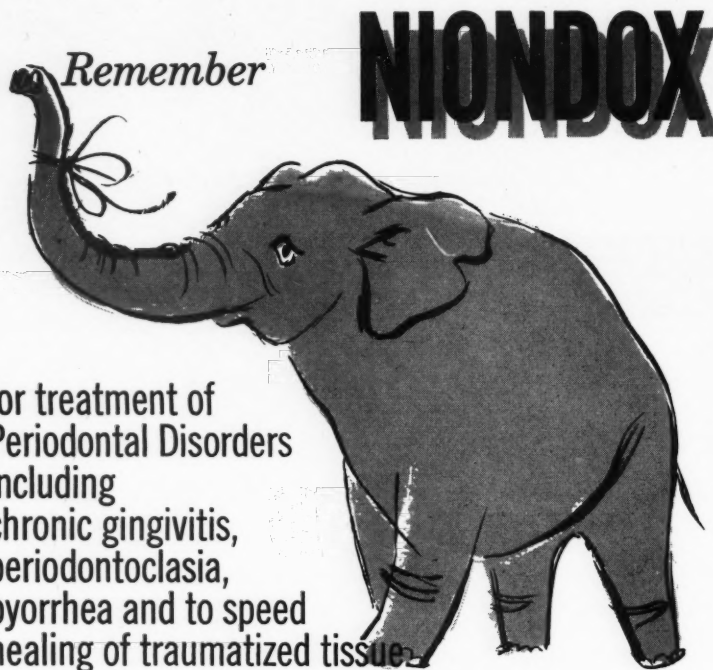
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References:

1. Toff, J. W., Internat. Den. Congress, Venice, Sept. 5-11, 1955.
2. Wellensich, E. K., Texas Dental Journal, 62:259 (1956).
3. Ibid.

Write for literature
and samples.

Surgery of the Head

Area Included

The middle third of the face includes that area from the occlusal surfaces of the maxillary teeth upward to the orbital floor, and from the nose to the nasopharynx including all the nasal sinuses. Because of the multitude of structures present, there is a great diversity in the nature of the benign and malignant neoplasms found here. These are broadly classified as (1) odontogenic tumors, (2) osteogenic tumors, (3) bone tumors arising from neither bone nor teeth, and (4) soft tissue tumors. The most frequent malignant neoplasm encountered is the squamous cell carcinoma of the maxilla or maxillary sinuses.

Etiologic Factors

These include (1) sex, (2) chronic irritations, (3) vitamin B deficiency, (4) alcoholism, (5) smoking, and (6) heredity. The signs and symptoms vary according to the location of the tumor.

Symptoms—Nasopharyngeal tumors often present first with cervical metastases. If near the eustachian tube, they may cause aural symptoms. Squamous cell tumors of the maxillo-facial sinus may produce obscure pain because of invasion of the bone ostia. However, the first symptom may be nosebleed or a loose tooth.

Aid in Diagnosis—Careful history taking, physical and roentgen examinations, and transillumination are essential, yet will often fail to reveal nasopharyngeal tumors and early sinus tumors. Exploratory biopsy through a Caldwell-Luc incision with the aid of radioactive phosphorus, which is concentrated in the tumor, is recommended as an aid in early diagnosis.

Treatment

In Malignant Tumors—The growth in nasopharyngeal tumors is usually large, inaccessible, and inoperable when discovered. The best treatment is irradiation with surgical removal of the lymph nodes, and the results are poor.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS, OF AUGUST 24, 1912.
Of Dental Digest, published monthly at Pittsburgh, Pa. for October 1, 1960.
State of Pennsylvania,
County of Allegheny,
ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. C. Ketterer, who, having been duly sworn according to law, deposes and says that he is the Vice President of the Dental Digest, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse side of this form, to wit:

1. That the name and addresses of the publisher and editor, are: Editor, E. J. Ryan, B.S., D.D.S., 708 Church Street, Evanston, Ill.; Publisher, M. B. Massol, 1005 Liberty Ave., Pittsburgh, Pa.; Managing Editor: None; Business Manager, R. C. Ketterer, 1005 Liberty Ave., Pittsburgh, Pa.
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(Signed) R. C. KETTERER,
Vice President
Sworn to and subscribed before me this 1st day of October, 1960.
(Seal) N. M. Gaertner, Notary Public.

Radical surgery is indicated for malignant tumors of the maxillary sinus and maxilla, with exenteration of the maxilla, including the lateral wall of the nose, the ethmoid and sphenoid sinus, the palate, and in many cases, the orbital contents.

Complete Removal—Some tumors of the maxilla of dental or sinus origin do not produce metastases. These require complete local removal without radical resection of adjacent tissues.

Results—Of 14 patients with squamous cell carcinoma of the maxillary sinus, 4 are living without evidence of tumor for periods varying from 2.5 to 7 years. Two others died from other causes free of tumor. Four died of tumor and 4 are living with tumor.

Treatment in Good Prognosis—The best prognoses are in those who have symptoms referable to the alveolar ridge such as loose tooth, tumor mass on ridge, or tumor of alveolar socket observed at the time of tooth extraction. These patients are treated by resection through the Fergusson-Weber incision, without orbital exenteration. Resection is followed by the resurfacing of the pterygoid fossa and all denuded surface by a split skin graft. Prostheses are used later, allowing periodic inspection for recurrence.

Early Diagnosis Needed

When the tumor breaks through the antrum to the pterygoid fossa or invades the cheek wall, exenteration of the orbital contents and, sometimes resection of the cheek is required. These cases have a poor prognosis. In order to improve the cure rate earlier diagnosis is needed and this should be associated with an effectual attack on the tumor. The authors believe a more radical excision should be employed and should include the contents of the orbital, pterygoid, and infratemporal fossae, the frontal bone, and all sinuses, with resurfacing of the entire cavity including the dura with a split skin graft.

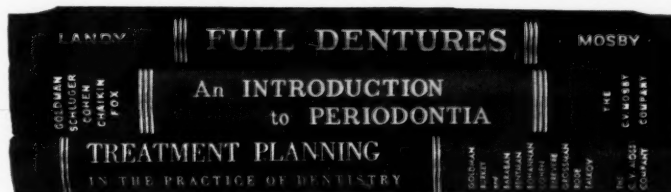
Adapted from Middle Third Facial Tumors by Clifford L. Kiehn and John D. Des Prez, Plastic and Reconstr. Surg. 24:137, 1959, in *Surgery, Gynecology & Obstetrics* 110:323 (April) 1960.

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